

Gustavo Franklin Nobrega

DevOps & Cloud Infrastructure Engineer

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Two decades on the unglamorous half of computing — the servers, clusters, databases and radio networks other people's software runs on. Today I own the platform at **infinitii ai**, where machine learning meets municipal water and wastewater systems, including the **self-hosted LLM gateway** the AI work runs on. Before that: a private cloud behind a nine-million-user social network, database clusters for banks, and a physics degree that began with a Beowulf cluster built from spare desktops in 1997.

60%

Lower data-centre cost at 2× capacity — published as an iWeb Technologies case study

9M+

Users, 150k concurrent at peak, on infrastructure I designed and ran

28 yrs

Volunteer sysadmin for a research HPC lab, continuously since 1998

CKA

Certified Kubernetes Administrator, plus LFCS and MCDBA

CORE STACK

AI INFRA	LiteLLM · Ollama · local open-source models · Model Context Protocol · opencode · Oh My Pi · Claude Desktop · Microsoft Teams and WhatsApp bots
CLOUD & VIRT	Microsoft Azure · AWS · Cloudflare Workers, Pages and R2 · Apache CloudStack · XCP-ng (6-node pool) · XenServer · VMware
STORAGE	Ceph (3-node; BlueStore tuning, CephFS over NFS-Ganesha) · MinIO · iSCSI · Beowulf · MOSIX
ORCHESTRATION	Kubernetes / RKE2 (multi-namespace production) · Helm · Docker · Ansible and Ansible Vault · Terraform · Jenkins · Azure DevOps · Codemagic
DATA	Cassandra (12-node; upgraded 3.11 to 4.1, Reaper, Medusa) · PostgreSQL · MySQL · MS SQL Server · MongoDB · Redis · InfluxDB · Telegraf · Grafana · Hadoop
SYSTEMS	Linux · FreeBSD · NGINX · pfSense · Unbound · BIND · OpenVPN DCO · Azure Point-to-Site · iptables / pf · Postfix · Nagios · Windows Server · Active Directory · Exchange Online · DMARC · Samba / CIFS
EMBEDDED	LoRa / LoRaWAN · ChirpStack · Zephyr · ESP32 · ESP8266 / NodeMCU · STM32 · Arduino
APPS & WEB	FastAPI · Fastify · Preact · Vite · Flutter · Riverpod · Drift · PMTiles · Android SDK · DJI Mobile SDK v5
LANGUAGES	Python · Dart · Go · C / C++ · Kotlin · Lua · Bash · JavaScript · TypeScript · PHP · R

EXPERIENCE

Director of IT · DevOps & Cloud Engineer

Jun 2018 — Present

infinitii ai Inc. / formerly Carl Data Solutions / British Columbia, Canada

- Own every project and system with reliability and performance as the standing brief.
- Built and run a hybrid cloud across Microsoft Azure and dedicated servers, cutting spend without trading away reliability.
- Designed and operate a self-hosted LLM gateway: several cloud AI providers and local open-source models behind one API, with load balancing, failover and rate-limit management for heavy, bursty agent traffic.
- Root-caused a third-party proxy bug that was silently corrupting request handling under load — found it through log analysis and fixed it upstream without vendor support.
- Built and run “Carl”, a self-hosted conversational AI serving customers inside the company's commercial web product, and extended the open-source bot framework under it with voice output and Microsoft Teams and WhatsApp channels.
- Brokered API keys to isolated agent deployments through a credential vault, so internal and external-facing environments share tooling without sharing secrets.
- Firmware engineer for IIoT climate stations and environmental data loggers, and designer of the long-range, low-power LoRa network serving the fleet.
- Backend engineering: APIs and bridge services that read from one system, reshape the data and publish it into another.

CTO · Software Engineer

Jul 2018 – Sep 2019

i4C Innovation Center / Trail, BC, Canada

- Set the technology vision and kept engineering spend aligned with what the business actually needed.
- Firmware engineer for IIoT environmental data loggers.

Shareholder · CTO · Senior SysAdmin & DBA

May 2006 – Jan 2018

eSapiens Tecnologia SA / Florianópolis, Santa Catarina, Brazil

- Built and operated a private cloud — database clusters, web service clusters, CDN, firewalls — behind a Brazilian social network with more than 9 million users and 150,000 concurrent at peak.
- Migrated the whole physical fleet onto that private cloud in four stages (iSCSI storage cluster, XenServer cluster, VM build-out, service cut-over), cutting data-centre cost 60% while doubling capacity.
- Optimised relentlessly for reliability, security and low cost, because all three were constraints at once.
- Introduced the data-modelling practice: algorithms, predictive models and ad-hoc analysis over the customer database to turn large data sets into decisions.

Co-founder & Technical Advisor

Apr 2017 – Jan 2018

Blocko Ventures / Florianópolis, Santa Catarina, Brazil

- Developed a private blockchain solution used across the company's projects.

Co-founder · CEO · IT Consultant

Jan 2011 – Dec 2014

Nobrega Tecnologia da Informação Ltda / Bauru, São Paulo, Brazil

- Consulting across Linux and Microsoft estates, with a specialty in database clusters for large Brazilian companies and banks.

Co-founder & IT Consultant

Nov 2007 – Jul 2011

Tricore Tecnologia da Informação e Comunicação Ltda / Bauru, São Paulo, Brazil

- Delivered Linux and Microsoft infrastructure projects, again with database clustering at the centre.

SysAdmin & DBA

Aug 2004 – Sep 2007

Planae Tecnologia da Informação Ltda / Bauru, São Paulo, Brazil

- Ran Linux and Windows servers for the largest loan-recovery company in South America, including a large PostgreSQL cluster.
- Consulted on databases, mail, web and DNS infrastructure for a long list of clients.

SELECTED PROJECTS

2019 – NOW	Fresh Water Data Commons — Canadian initiative digitising strategic water bodies for a real-time view of ecosystem health. Firmware engineer for the sensors and LPWAN engineer for the network: the LoRaWAN estate plus the stack integrating it with backend systems.
2018 – NOW	Astra AirSafe — ultra-low-cost industrial smoke sensor, hardware through firmware. 56 grams, a reading every three seconds, temperature and particulates. Enclosure 3D-printed in-house; firmware and API in Lua; backend on AWS.
2013	Private cloud migration — the four-stage fleet migration behind the 60% cost and 2× capacity result above.
1997	First Beowulf cluster at UNESP Bauru — built for chemistry simulations: Linux nodes, NFS and NIS+, a batch queue manager, and a MOSIX single-system-image lab alongside it.

JAVASCRIPT	mcp-d4h — Model Context Protocol server putting Claude Desktop on the D4H Team Manager and Operations Center APIs: dozens of tools for incident management, personnel tracking and equipment logistics.
KOTLIN	DroneTopo — streams DJI drone position into CalTopo, so a search manager sees the aircraft on the same map as the ground teams.
PYTHON	chirpstack-iot-hub-bridge — forwards ChirpStack device messages from a pub/sub broker into Azure IoT Hub.
C++ · LUA	esp32-adc-calibrated — the ESP32 ADC calibration everybody skips · lua_wifimanager — WiFi provisioning for NodeMCU devices with no screen and no keyboard.

VOLUNTEERING

6+ YRS	President · Castlegar Search and Rescue — chair the team, lead crews in the field as a Team Leader, and run incidents as a SAR Manager. Started with 100 hours of ground search and rescue training at the Justice Institute of BC; now certified in advanced non-urban medical care.
1998 — NOW	SysAdmin · Computer Simulation Laboratory, UNESP — twenty-eight years maintaining the cluster computers and software researchers depend on, and architecting the next HPC solution.
2024 — NOW	Soccer Coach · Kootenay South Youth Soccer Association — weekly practices through the season, games on the weekend. Respect in Sport certified.
2013 — 2021	Code review · OpenStack (2013–2016) · Director of Web Operations · Kootenay Mountaineering Club (2020–2021).

EDUCATION

2011–2012	Master in Materials Science POSMAT, Faculty of Science — São Paulo State University (UNESP)
2007–2010	B.Sc. in Physics Faculty of Science — São Paulo State University (UNESP)

LANGUAGES

Native	Portuguese
Full	English
Full	Spanish
Basic	French

CERTIFICATIONS

2023	Amateur Radio Operator — VA7PQP Innovation, Science and Economic Development Canada
2022	Certified Kubernetes Administrator (CKA) The Linux Foundation
2016	Linux Foundation Certified System Administrator The Linux Foundation
2015	Big Data with Hadoop and NoSQL FIAP — São Paulo
2015	Cloud Computing Specialization University of Illinois at Urbana-Champaign
2007	Microsoft Certified Database Administrator Microsoft · Microsoft Certified Professional, 2006

Writing, the full stack list and the current project log live at [nobrega.com.br](#). Academic record: [Currículo Lattes — CNPq](#).